

**CLAIMS**

1. A safety apparatus for a movable barrier operator  
comprising:

5 a source of electrical voltage between a first conductor and a  
second conductor;

a non-contact obstruction detector connected to the first and  
second conductors for detecting obstructions to movement of the barrier;

a voltage sensing apparatus connected between a first  
conduction path and a second conduction path; and

10 the non-contact obstruction detector comprises switch apparatus  
for connecting the first and second conductors to the first and second  
conduction paths.

2. The safety apparatus of claim 1 wherein the non-contact  
15 obstruction detector comprises an optical obstruction detector.

3. The safety apparatus of claim 1 wherein the switch  
apparatus disconnects one or both of the first and second conduction paths  
from the first and second conductors in response to an obstruction.

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4. The safety apparatus of claim 1 wherein the switch  
apparatus disconnects one or both of the first and second conduction paths  
from the first and second conductors in response to a fault of the obstruction  
detector.

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5. The safety apparatus of claim 1 wherein one or both of the  
first and second conduction paths comprises a portion of a barrier edge  
obstruction detector.

6. The safety apparatus of claim 5 wherein the barrier edge obstruction detector responds to an obstruction contacting the door edge by connecting the first and second conduction paths.

5                   7. The safety apparatus of claim 5 wherein the barrier edge obstruction detector responds to an obstruction contacting the door edge by opening one or both of the first and second conduction paths.

8. The safety apparatus of claim 1 wherein the voltage sensing  
10 apparatus comprises a relay having a coil connected to the first and second conduction paths.

9. The safety apparatus of claim 8 wherein the relay comprises a contact pair and the safety apparatus comprises circuitry for sensing a state  
15 of the contact pair.

10. The safety apparatus of claim 9 wherein the circuitry for sensing comprises semiconductor circuitry.

20                   11. The safety apparatus of claim 10 wherein the semiconductor circuitry comprises a microprocessor.

12. The safety apparatus of claim 9 wherein the circuitry for sensing comprises relay logic circuitry.  
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13. The safety apparatus of claim 1 comprising a resistance serially connected in one or both of the conduction paths.

14. The combination of claim 8 comprising a resistance, similar in amount to a resistance of the coil, serially connected in one or both of the first and second conduction paths.

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15. In combination:

a motor for moving a barrier between an open and a closed position;

a source of electrical voltage between a first conductor and a second conductor;

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a non-contact obstruction detector connected to the first and second conductors for detecting obstructions to movement of the barrier;

a voltage sensing apparatus connected between a first conduction path and a second conduction path;

the non-contact obstruction detector comprises switch apparatus for connecting the first and second conductors to the first and second conduction paths; and

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control apparatus for energizing the motor to move the barrier to a safe position when the voltage sensing apparatus senses voltage less than a predetermined value.

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16. The combination of claim 15 wherein the safe position is the open position.

17. The combination of claim 15 wherein the safe position is the closed position.

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18. The combination of claim 15 wherein the non-contact obstruction detector comprises an optical obstruction detector.

19. The combination of claim 15 wherein the safe position is backing away from the obstruction a predetermined distance.